How to setup a USB 3G Modem on Raspberry PI using usb_modeswitch and wvdial

Submitted by The Fan Club on Tue, 2013-11-12 16:04

Setting up a USB 3G/4G modem on a Raspberry Pi is not a simple task. There are many guides available using the now defunct **sakis3g** script, but getting my modem to work required a bit more understanding.

The main problem is that most USB modems act as two devices - a USB storage device and a USB modem. When plugged in to the Raspberry PI the device is usually in USB storage mode. There is a program called **usb_modeswitch** that we can use to do the switching

The other missing part is a way to connect to the cellular network with the USB modem from the Raspberry. For this we will use the classic **ppp** and **wvdial** programs.

Requirements

- Raspberry PI computer
- Raspbian OS installed
- USB 3G Modem
- 5V 1A power supply for the Raspberry PI

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1. Install required software

- Connect your Raspberry PI to the internet via LAN or Wifi
- Open a terminal window and enter:

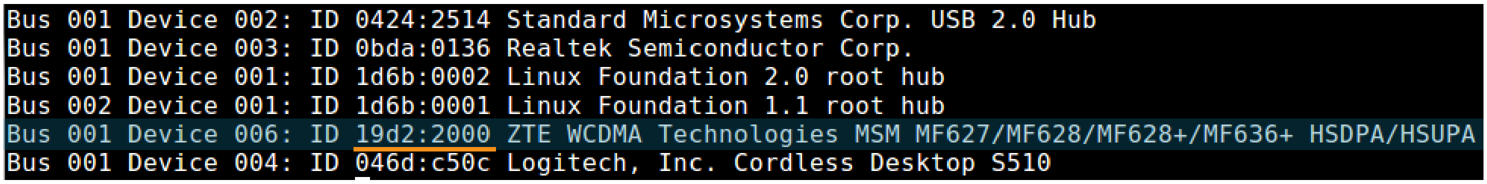
```
sudo apt-get update
sudo apt-get install ppp usb-modeswitch
wvdial
```

2. Get the USB switching codes

- We need to get the codes of the USB device in USB storage mode and USB modem mode.
- Connect your USB modem and reboot the Raspberry PI without LAN or Wifi connection
- Once rebooted open a terminal window and enter:

```
lsusb
```

- The output will look similar to the screenshot below. Your modem should be listed as one of the USB devices. Note the numbers underlined. These are the device vendor and product codes.



```
Bus 001 Device 002: ID 0424:2514 Standard Microsystems Corp. USB 2.0 Hub
Bus 001 Device 003: ID 0bda:0136 Realtek Semiconductor Corp.
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 001 Device 006: ID 19d2:2000 ZTE WCDMA Technologies MSM MF627/MF628/MF628+/MF636+ HSDPA/HSUPA
Bus 001 Device 004: ID 046d:c50c Logitech, Inc. Cordless Desktop S510
```

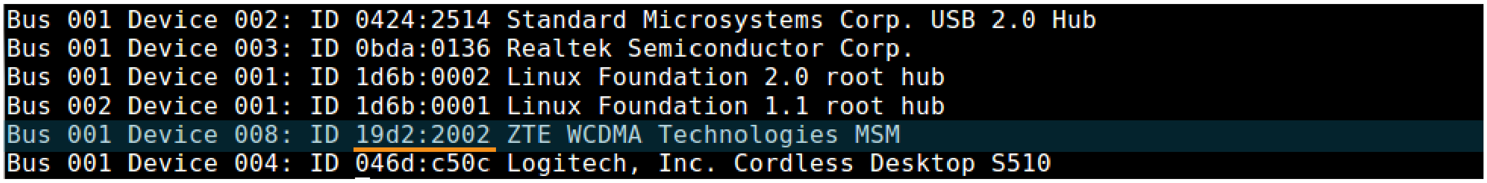
- Make a note of these numbers. In this case it is **19d2:2000**
- This value will later be used in the **DefaultProduct** value
- Then we need to soft reboot the Rapberry PI with the modem connected.
- Open a terminal window and enter:

```
sudo
reboot
```

- Once rebooted open a terminal window and enter:

```
lsusb
```

- The output will look similar to the screenshot below. Your modem should be listed and if you are lucky the second set of numbers would have changed. This is usb_modeswitch doing it's job and switching the device to USB modem mode.



```
Bus 001 Device 002: ID 0424:2514 Standard Microsystems Corp. USB 2.0 Hub
Bus 001 Device 003: ID 0bda:0136 Realtek Semiconductor Corp.
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 001 Device 008: ID 19d2:2002 ZTE WCDMA Technologies MSM
Bus 001 Device 004: ID 046d:c50c Logitech, Inc. Cordless Desktop S510
```

- Make a note of the new numbers. In this case it is **19d2:2002**
- This value will be used later in the **TargetProduct** value

3. Create custom usb_modeswitch config file

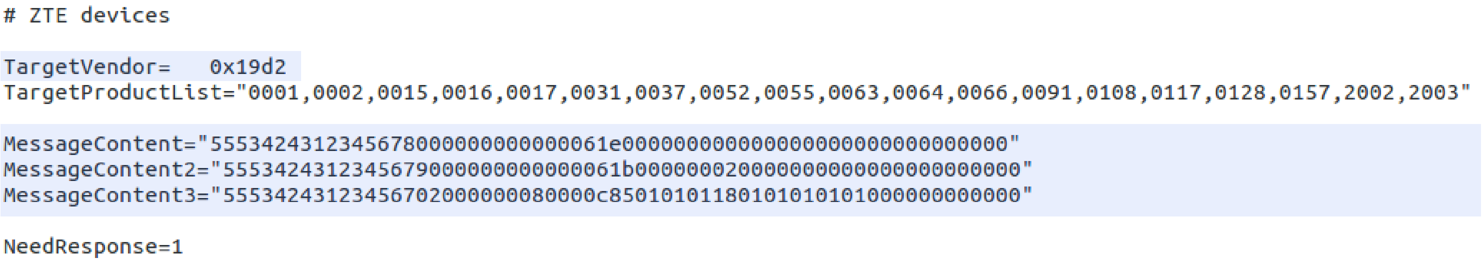
- We need to create a custom config file for usb_modeswitch on the Raspberry PI because on a cold boot the device is not always active yet when usb_modeswitch runs on startup and the device is left in USB storage mode.
- We will extract some more information for our usb_modeswitch config file so that we can do the switching manually.
- Open a terminal window and enter the following replacing the codes **19d2** and **2000** with the codes you noted in step 2. Also note the added backslash.

```
cd /tmp
tar -xzvf /usr/share/usb_modeswitch/configPack.tar.gz
19d2\:2000
```

- Now open the extracted file with a text editor like leafpad replacing the codes noted in step 2.

```
leafpad 19d2:2000
```

- The content of the file should look something similar to the screenshot below.
- The parts we are interested in are shown in blue.



```
# ZTE devices

TargetVendor=   0x19d2
TargetProductList="0001,0002,0015,0016,0017,0031,0037,0052,0055,0063,0064,0066,0091,0108,0117,0128,0157,2002,2003"

MessageContent="5553424312345678000000000000061e000000000000000000000000000000"
MessageContent2="5553424312345679000000000000061b000000002000000000000000000000"
MessageContent3="55534243123456702000000080000c85010101180101010101000000000000"

NeedResponse=1
```

- Now open the **/etc/usb_modeswitch.conf** file and add the information obtained above to the file.
- Open a terminal window and enter:

```
sudo leafpad
/etc/usb_modeswitch.conf
```

- Then add the following replacing the codes and MessageContent values with those of your device and save.

```
DefaultVendor=0x19d2
DefaultProduct=0x2000

TargetVendor=0x19d2
TargetProduct=0x2002

MessageContent="5553424312345678000000000000061e000000000000000000000000000000"
MessageContent2="5553424312345679000000000000061b000000002000000000000000000000"
MessageContent3="55534243123456702000000080000c85010101180101010101000000000000"
```

4. Create the wvdial config file

- The next step is to create a config file for wvdial so you can connect to your service provider.
- Open a terminal window and enter:

```
sudo leafpad
/etc/wvdial.conf
```

- Replace the content of the file with the following.

```
[Dialer 3gconnect]
Init1 = ATZ
Init2 = ATQ0 V1 E1 S0=0 &C1 &D2
+FCLASS=0
Init3 = AT+CGDCONT=1,"IP","internet"
Stupid Mode = 1
Modem Type = Analog Modem
ISDN = 0
Phone = *99#
Modem = /dev/gsmmodem
Username = { }
Password = { }
Baud = 460800
```

- Replace internet with your service provider's **APN**
- Replace the **Phone** number if you need to dial a different code to connect.
- Replace **Username** and **Password** if needed. To leave the username and password as blank use { }

5. Connect to the internet

- To connect we need to make sure the device is in modem mode.
- Open a terminal and enter:

```
sudo usb_modeswitch -c
/etc/usb_modeswitch.conf
```

- Then connect to the internet with:

```
wvdial
3gconnect
```

Tags:

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Comments

Hi. Is there any way to

Submitted by bogdan (not verified) on Sat, 2013-11-23 21:58

Hi. Is there any way to forward ports (22 in my case) on a 3g usb dongle (Huawei e3131) connected to the USB of an RaspberyPi. I want remote access to the shell of the Raspbery.

- reply

If your service provider

Submitted by The Fan Club on Sat, 2013-11-23 23:19

If your service provider allows your 3G USB modem a public IP you can access ssh directly with the IP. You will need a DDNS service like Duck DNS to point a domain name to the IP of the 3G modem as the public IP of the modem will change.

- reply

Hi, can this method be

Submitted by Khingcat (not verified) on Tue, 2013-12-03 04:48

Hi, can this method be applied for EVDO USB modem? Thank you.

- reply

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